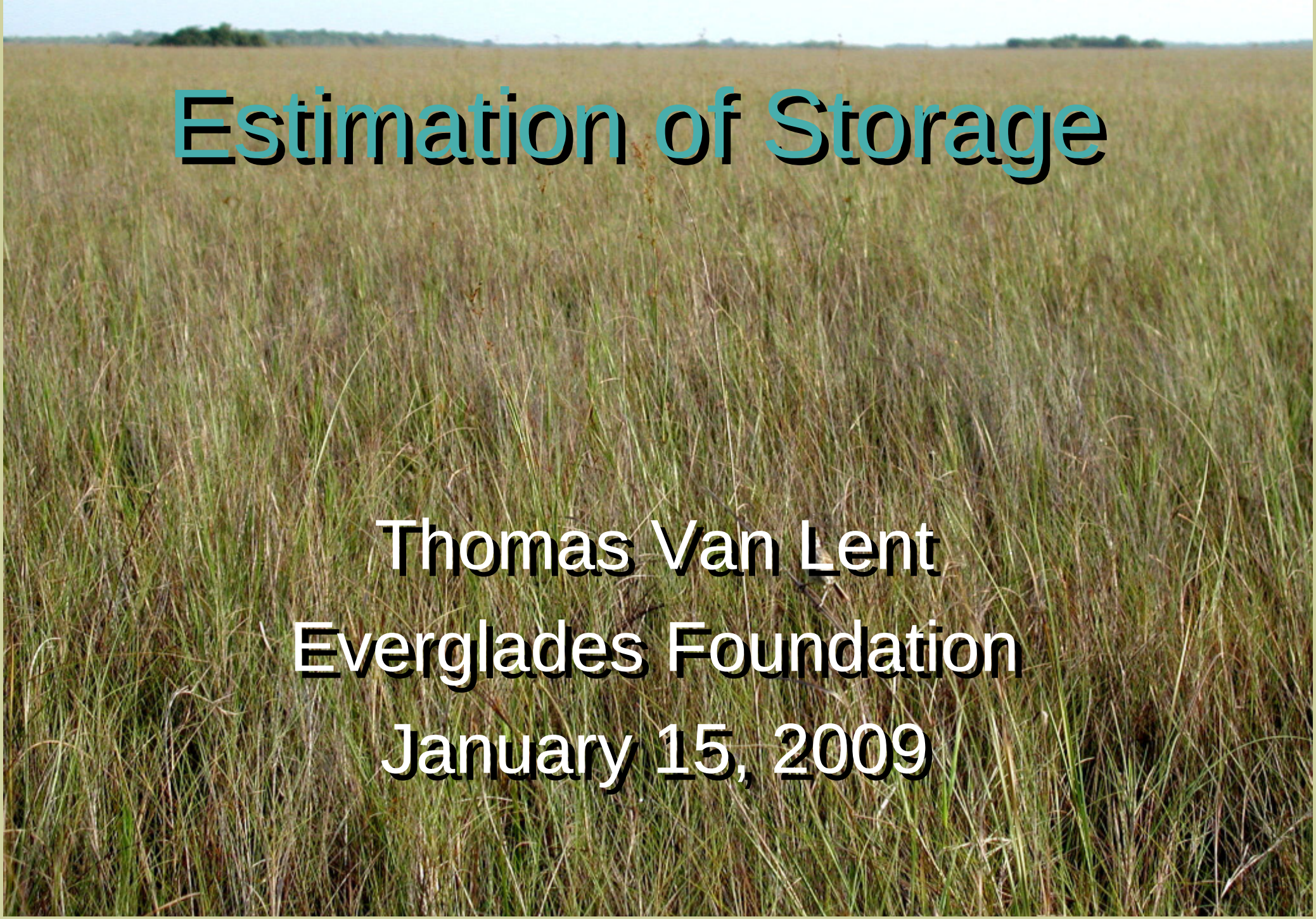

Estimation of Storage

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Background

nvestigation of storage needs grew out of effort to education environmental community on options, trade-offs, and costs

- Diversity of opinions on value of subcomponents of Everglades ecosystem
- Range of understanding on CERP project elements, trade-offs, objectives

Effort was conducted as a series of workshops with individual groups.

Essentials Game

STA

$1.5 Billion

Each group went through a "CERP storage" contingen planning process:

–Place storage on the landscape

Storage 500,000 a-f $0 or $1.0 Billion | Storage 500,000 a-f $0 or $1.0 Billion | Storage 500,000 a-f $0 or $1.0 Billion | Storage 500,000 a-f $0 or $1.0 Billion | Storage 500,000 a-f $0 or $1.0 Billion | Storage 500,000 a-f $0 or $1.0 Billion | ASR 500,000 a-f $0.5 Billion | ASR 500,000 a-f $0.5 Billion

Dynamic Storage 50,000 a-f | Dynamic Storage 50,000 a-f | Dynamic Storage 50,000 a-f | Dynamic Storage 50,000 a-f | Dynamic Storage 50,000 a-f | Dynamic Storage 50,000 a-f

–Identify "restoration" areas

STA $1.5 Billion | STA $1.5 Billion

–Place STAs on landscape

–Total the costs

This was a planning exercise, not de

Analysis

Approached as a classical reservoir size problem using a sequent peak analysis

$$K_t = R_t - Q_t + K_{t-1} \quad \text{if positive}$$
$$0 \quad \text{otherwise}$$

where K_t is storage, R_t is demand, Q_t is supply at time *t*

Used SFWMM to estimate demand and supply inputs

-examined range of flow and depth in Everglades Protection Area

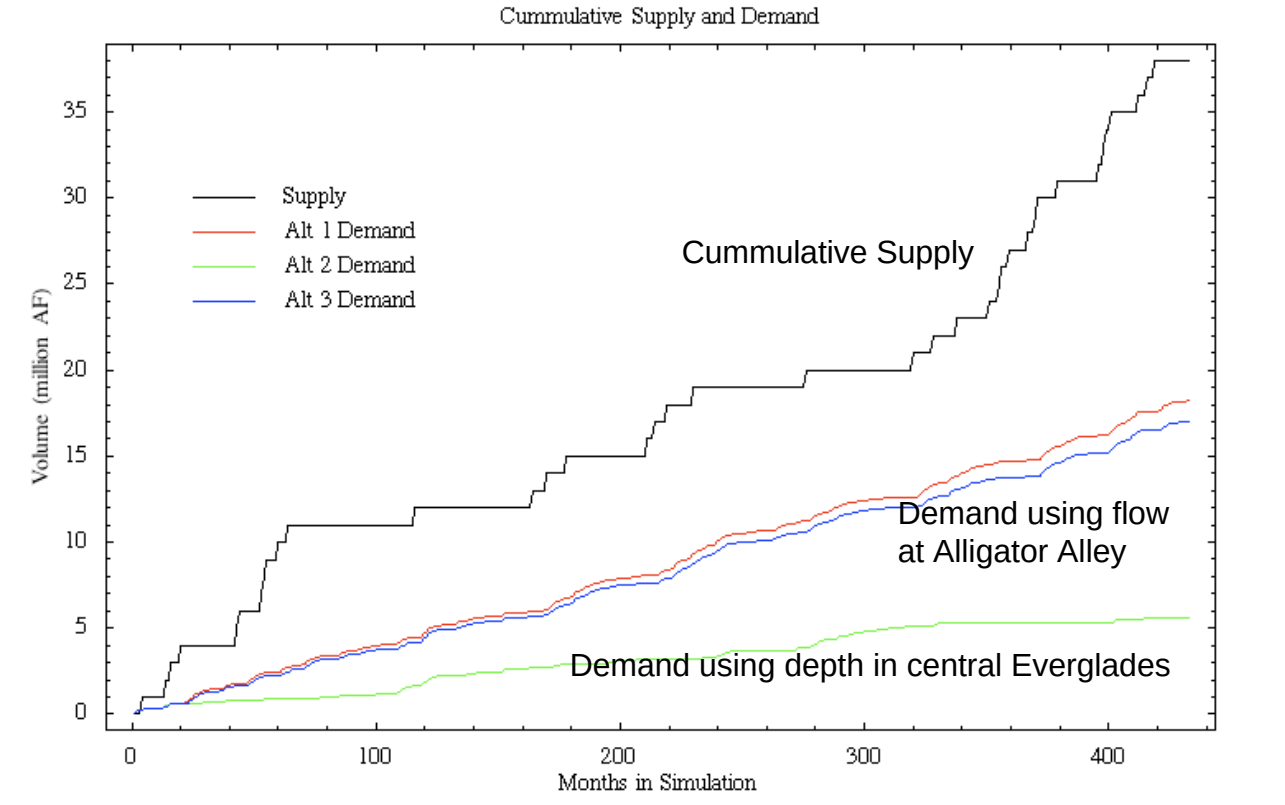
Critical Questions

- What is target for Everglades?
- What are reasonable estimates for configuration for C&SF infrastructure?
- What is planning “level of service”?

Target

Looked at

- depth targets in northern, central, and southern Everglades
- flow targets at Alligator Alley and Tamiami Trail



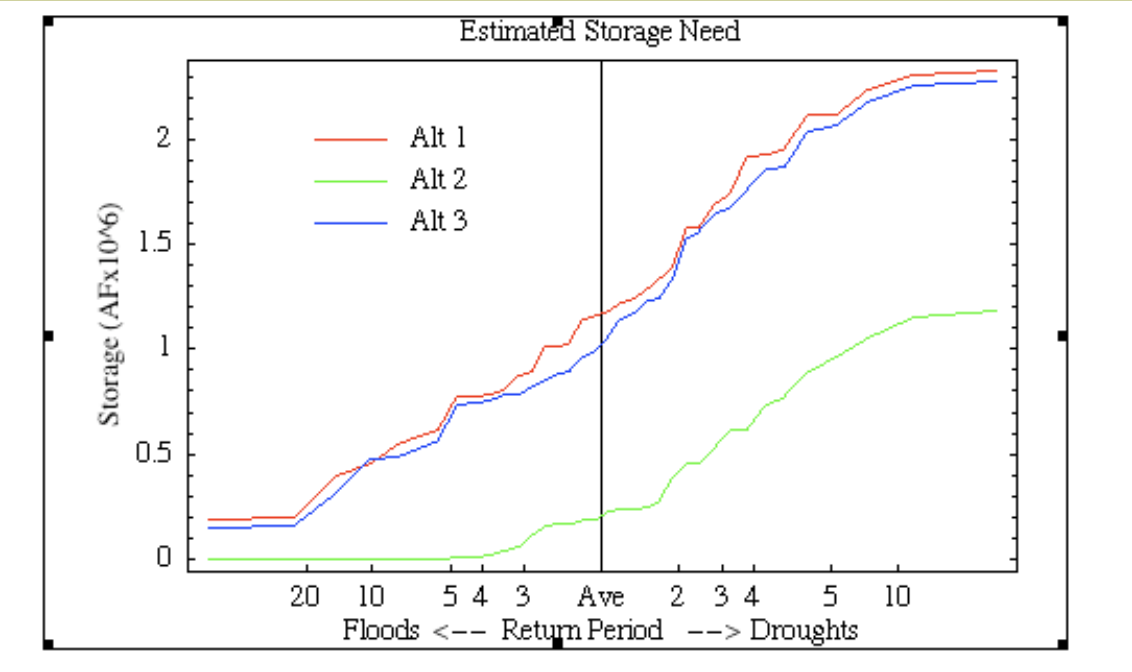
Conclusion: Targets matter. A lot.

Infrastructure

- In SFWMM, need detailed description of infrastructure
  - strong interactions with built environment modify environmental demands on both wet and dry side.
  - specification of numerous extraneous details sidetracked focus on “global” solution
- Conclusions
  - Focus first on “global” solution to get all components to fit during wet and dry periods.
  - Use vision of future to make broad assumptions on infrastructure

Level of Service

Need to define “level of service” to size any reservoir



Conclusions:

– Reservoir size strongly depends on level of service

Conclusions

Targets matter.

- Large variability in outcome even with reasonable assumptions. "**The Answer**" not self-evident.
- We will likely end up with hybrid of depth and flow.

Think large-scale first.

- Get major pieces (estuaries, Lake, Everglades) to fit before moving to subcomponents.
- Make assumptions on infrastructure based on long-range vision.

Level of Service matters.

- Interface of planning, hydrology, biology.